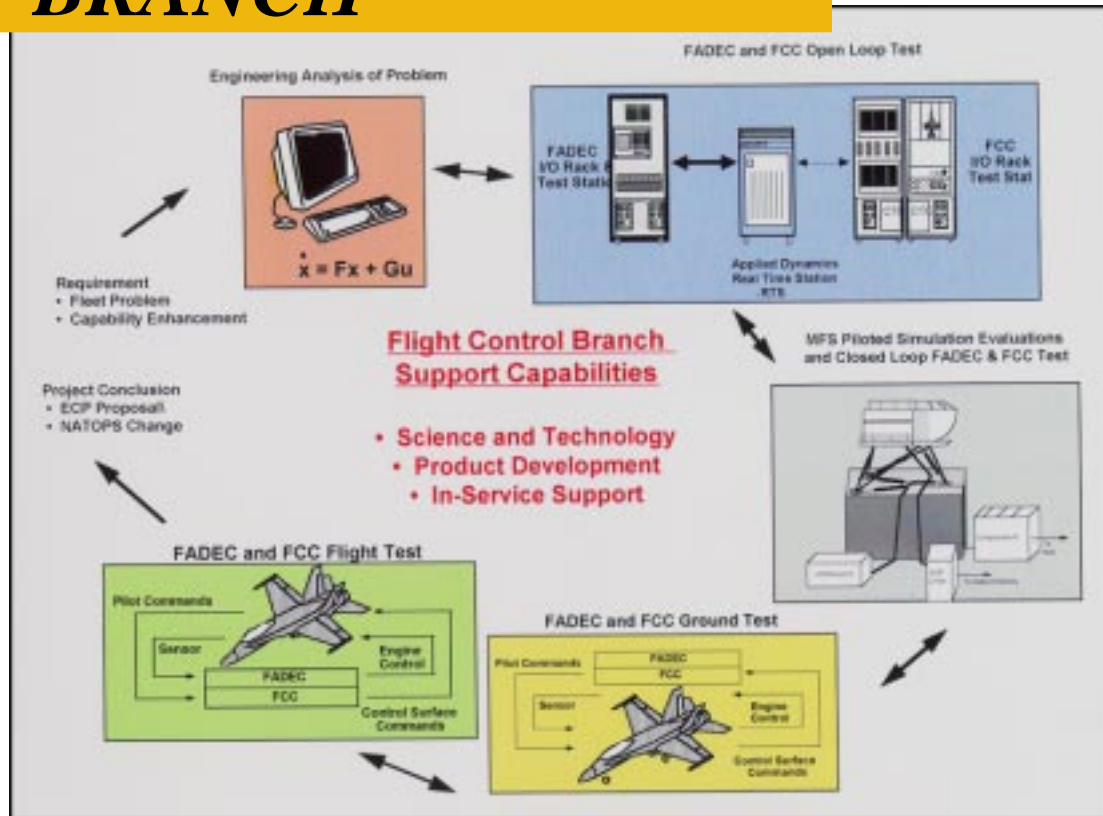


FLIGHT CONTROLS BRANCH



The Flight Controls (FC) Branch, is responsible for that development, standardization, test evaluation, production engineering, and fleet support of flight control systems, and components. The competency encompasses systems engineering, test and evaluation, and technologies associated with flight control systems, components and subsystems providing primary and secondary control, automatic control, auto throttle, integrated propulsion and flight control and aircraft dynamics for all manned and unmanned air vehicles.

Flight Controls Branch Laboratory

The competency develops, defines and administers performance criteria for flight control systems and tailors these criteria to a specific air vehicle; it is responsible for system architecture and redundancy management design, (Including built-in test), development analysis and test hardware and software design; development; integration and test; control theory development; flight/propulsion control simulations, flight/propulsion control computer hardware-in-the-loop test station development, and executing the role of a flight control system software support activity. The FC Competency responsibility encompasses all aspects of RDT&E including basic research, exploratory and advanced development, all phases of acquisition support from Concept Exploration through Engineering and Manufacturing development, and Operations and Support and system upgrades. The competency is directly supported by real time pilot-in-the-loop simulation and testing, in-flight research and full scale flight test. It is also responsible for in-service engineering for mechanical and electrical flight control systems and operational fleet aircraft. The FC Branch is closely tied to the Flight Vehicle Simulation Competency and the Aircraft Product Support Team which reside in the Manned Flight Simulator Facility.

Flight Controls: The Flight Controls (FC) Branch, is responsible for the development, standardization, test evaluation, production engineering, and fleet support of flight control systems and components and aircraft dynamic systems. The branch provides extensive flight controls experience and expertise in support of numerous Navy aircraft which include but are not limited to the F/A-18C/D, F/A-18C/D Production Support Flight Control Computer (PSFCC), F/A-18E/F, F-14B/D, F-14DFCS (Digital Flight Control System), V-22 EMD (Engineering & Manufacturing Development), AV-8B and F/A-18 GPWS (Ground Proximity Warning System), S-3 (Digital Flight Data Computer) programs. The competency has expertise in flight control law design for improved flying qualities and departure prevention as exemplified by the F-14 DFCS program; and design, development and validation of GPWS algorithms as demonstrated by AV-8B and F/A-18 to prevent controlled-flight-into-terrain accidents. In-house developed Flight Control Computer (FCC) test stations are available in the Manned Flight Simulator (MFS) facility for the F-18C/D, F/A-18E/F, V-22EMD, E-2, EA-6B and S-3B for fully integrated flight control hardware-in-the-loop piloted simulations. A real-time hardware-in-the-loop



FADEC (Full Authority Digital Engine Control) capability in support the F/A-18E/F engine development is in progress which will be available in the near future. The competency provides extensive capability for analysis of control system related fleet incidents and accidents. In the near future the F/A-18C/D will have a PSFCC capability which will provide in-flight emulation and analysis of production flight control law and redundancy management and control system problems. The competency has developed an extensive tool set in support of RDT&E applications. These include Research & Engineering analysis (e.g. FC Reconfiguration, Intelligent FC, Flying Qualities analysis, Systems Identification analysis, etc.), Manned simulation, and FCC hardware and software support.

For more information contact the Flight Control Analysis at the Naval Air Warfare Center Aircraft Division at Patuxent River, MD 20670 at 301-342-8556.